

SPECIFICATION AMENDMENTS

On page 1, insert above line 1, insert--Priority Claim

The present application claims priority on European Patent Application 02077921.1
filed 18 July 2002.--

On page 1, above line 1, insert--Field of the Invention--

Paragraph at line 1 of page 1 has been amended as follows:

--The invention is directed related to a process to prepare a Fischer-Tropsch
derived microcrystalline wax.--

Paragraph at line 19 of page 1 has been amended as follows:

-- Said presentation also discloses a process to prepare middle distillates by
hydrocracking/~~hydroisomerisation~~ hydroisomerization of the Fischer-Tropsch synthesis
product.--

On page 2a, after line 4, insert--Summary of the Invention--

Paragraph at line 4 of page 2a has been amended as follows:

--~~The object of the~~ The present invention provides a process is to integrate the
process of preparing soft waxes having a high congealing point with the production of
middle distillate fuels having good cold flow properties.--

Paragraph at line 8 of page 2a has been amended as follows:

-- ~~The following process achieves this object.~~ The invention is directed to a
process Process to prepare a microcrystalline wax and a middle distillate fuel by
(a) hydrocracking/~~hydroisomerising~~ hydroisomerizing a Fischer-Tropsch product,
wherein the product has a weight ratio of compounds having at least 60 or more carbon
atoms and compounds having at least 30 carbon atoms ~~in the Fischer-Tropsch product is of~~
at least 0.4 and wherein at least 30 wt% of compounds in the Fischer-Tropsch product have
at least 30 carbon atoms and wherein the conversion in step (a) is between 25 and 70 wt%,

performing one or more distillate separations on the effluent of step (a) to obtain a middle distillate fuel fraction and a microcrystalline wax having an initial boiling point of between 500 and 600 °C.--

On page 3, after line 2, insert--Detailed Description of the Invention--

Paragraph at line 3 of page 3 has been amended as follows:

--Applicants found that by performing the hydrocracking/~~hydroisomerisation~~ hydroisomerization step with the relatively heavy feedstock a process is obtained wherein in one hydrocracking step both middle distillates and a microcrystalline wax are obtained in a high yield. A further advantage of said process is that the fraction obtained boiling between said middle distillates and the microcrystalline wax is very suited as a lubricating base oil precursor. By dewaxing said fraction excellent quality base oils may be obtained.--

Paragraph at line 13 of page 3 has been amended as follows:

-- The process of the present invention results in middle distillates having exceptionally good cold flow properties. These excellent cold flow properties could perhaps be explained by the relatively high ratio iso/normal and especially the relatively high amount of di- and/or trimethyl compounds. Nevertheless, the cetane number of the diesel fraction is more than excellent at values far exceeding 60, often values of 70 or more are obtained. In addition, the ~~sulphur~~ sulfur content is extremely low, always less than 50 ppmw, usually less than 5 ppmw and in most case the ~~sulphur~~ sulfur content is zero. Further, the density of especially the diesel fraction is less than 800 kg/m³, in most cases a density is observed between 765 and 790 kg/m³, usually around 780 kg/m³ (the viscosity at 100 °C for such a sample being about 3.0 cSt). Aromatic compounds are virtually absent, i.e. less than 50 ppmw, resulting in very low particulate emissions. The polyaromatic content is even much lower than the aromatic content, usually less than 1 ppmw. T95, in combination with the above properties, is below 380 °C, often below 350 °C.--

Paragraph at line 18 of page 4 has been amended as follows:

-- The initial boiling point of the Fischer-Tropsch product may range up to 400 °C, but is preferably below 200 °C. Preferably any compounds having 4 or less carbon atoms and any compounds having a boiling point in that range are separated from a Fischer-

Tropsch synthesis product before the Fischer-Tropsch synthesis product is used in step (a). In addition to the Fischer-Tropsch product ~~also~~ other fractions may also be additionally processed in step (a). Possible other fractions may suitably be any excess microcrystalline wax as obtained in step (b) or off-spec base oil fractions if base oils are also prepared in said process.--

Paragraph at line 3 of page 5 has been amended as follows:

-- The Fischer-Tropsch product will contain no or very little ~~sulphur~~ sulfur and nitrogen containing compounds. This is typical for a product derived from a Fischer-Tropsch reaction, which uses synthesis gas containing almost no impurities. Sulphur and nitrogen levels will generally be below the detection limits, which are currently 5 ppm for ~~sulphur~~ sulfur and 1 ppm for nitrogen.--

Paragraph at line 25 of page 5, ending at line 10 of page 6, has been amended as follows:

-- The hydrocracking/~~hydroisomerisation~~ hydroisomerization reaction of step (a) is preferably performed in the presence of hydrogen and a catalyst, which catalyst can be chosen from those known to one skilled in the art as being suitable for this reaction. Catalysts for use in step (a) typically comprise an acidic functionality and a hydrogenation/dehydrogenation functionality. Preferred ~~acidic functionality's~~ functionalities are refractory metal oxide carriers. Suitable carrier materials include silica, alumina, silica-alumina, zirconia, titania and mixtures thereof. Preferred carrier materials for inclusion in the catalyst for use in the process of this invention are silica, alumina and silica-alumina. A particularly preferred catalyst comprises platinum supported on a silica-alumina carrier. If desired, applying a halogen moiety, in particular fluorine, or a phosphorous moiety to the carrier, may enhance the acidity of the catalyst carrier. Examples of suitable hydrocracking/ ~~hydroisomerisation~~ hydroisomerization processes and suitable catalysts are described in WO-A-0014179, EP-A-532118, EP-A-666894 and the earlier referred to EP-A-776959.--

Paragraph at line 12 of page 6 has been amended as follows:

-- Preferred hydrogenation/dehydrogenation ~~functionality's~~ functionalities are Group VIII noble metals, for example palladium and more preferably platinum. The catalyst may comprise the hydrogenation/dehydrogenation active component in an amount of from

0.005 to 5 parts by weight, preferably from 0.02 to 2 parts by weight, per 100 parts by weight of carrier material. A particularly preferred catalyst for use in the hydroconversion stage comprises platinum in an amount in the range of from 0.05 to 2 parts by weight, more preferably from 0.1 to 1 parts by weight, per 100 parts by weight of carrier material. The catalyst may also comprise a binder to enhance the strength of the catalyst. The binder can may be non-acidic. Examples are clays and other binders known to one skilled in the art.--

Paragraph at line 26 of page 6, ending at line 4 of page 7, has been amended as follows:

-- In step (a) the feed is contacted with hydrogen in the presence of the catalyst at elevated temperature and pressure. The temperatures typically will be in the range of from 175 °C to 380 °C, preferably higher than 250 °C and more preferably from 300 °C to 370 °C. The pressure will typically be in the range of from 10 bar to 250 bar and preferably between 20 bar and 80 bar. Hydrogen may be supplied at a gas hourly space velocity of from 100 to 10000 NI/l/hr, preferably from 500 to 5000 NI/l/hr. The hydrocarbon feed may be provided at a weight hourly space velocity of from 0.1 to 5 kg/l/hr, preferably higher than 0.5 kg/l/hr and more preferably lower than 2 kg/l/hr. The ratio of hydrogen to hydrocarbon feed may range from 100 to 5000 NI/kg and is preferably from 250 to 2500 NI/kg.--

Paragraph at line 13 of page 8 has been amended as follows:

--The soft microcrystalline wax as obtained with the above process has preferably a congealing point as determined by ASTM D 938 of between 85 and 120 and more preferably between 95 °C and 120 °C and a PEN at 43 °C as determined by IP 376 of more than 0.8 mm and preferably more than 1 mm. The wax is further characterized in that it preferably comprises less than 1 wt% aromatic compounds and less than 10 wt% naphthenic compounds, more preferably less than 5 wt% naphthenic compounds. The mol percentage of branched paraffins in the wax is preferably above 33 mol% and more preferably above 45 mol% and below 80 mol% as determined by C13 NMR. This method determines an average molecular weight for the wax and subsequently determines the mol percentage of molecules having a methyl branch, the mol percentage of molecules having an ethyl branch, the mol percentage of molecules having a C3 branch and the mol percentage having a C4+ branch, under the assumption that each molecule does not have more than one branch. The mol% of branched paraffins is the total of these individual percentages. This method calculated the

mol% in the wax of an average molecule having only one branch. In reality, paraffin molecules having more than one branch may be present. Thus the content of branched paraffins determined by different ~~method~~ methods may result in a different value.--

Paragraph at line 3 of page 9 has been amended as follows:

-- The oil content as determined by ASTM D 721 is typically below 10 wt% and more preferably below 6 wt%. If lower oil contents are desired it may be advantageous to perform an additional de-oiling step. De-oiling processes are well known and are for example described in Lubricant Base Oil and Wax Processing, Avilino Sequeira, Jr, Marcel Dekker Inc., New York, 1994, pages 162-165. After de-oiling, the wax preferably has a oil content of between 0.1 and 2 wt%. The lower limit is not critical. Values of above 0.5 wt% may be expected, but lower values can be achieved depending on the method in which the wax is obtained. Most likely the oil content will be between 1 and 2 wt%. The kinematic viscosity at 150 °C of the wax is preferably higher than 8 cSt and more preferably higher than 12 and lower than 18 cSt.--

On page 12, above line 1, insert --We claim:--